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**ECONOMIC ANALYSIS
OF CRITICAL HABITAT DESIGNATION
FOR THE PIPING PLOVER:
WINTERING HABITAT**

(Revised)

Prepared for:

Division of Economics
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive
Arlington, VA 22203

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Prepared by:

Industrial Economics, Incorporated
2067 Massachusetts Avenue
Cambridge, Massachusetts 02140

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PREFACE

1. This report was prepared for the U.S. Fish and Wildlife Service (the Service) by Industrial Economics, Incorporated (IEc) to assess the economic impacts that may result from designation of critical habitat for wintering piping plovers.
1. On May 11, 2001, the U.S. Court of Appeals in the Tenth Circuit issued a ruling that addressed the analytical approach used by the Service to estimate the economic impacts associated with the critical habitat designation for the southwestern willow flycatcher.¹ Specifically, the court rejected the approach used by the Service to define and characterize baseline conditions.² Defining the baseline is a critical step within an economic analysis, as the baseline in turn identifies the type and magnitude of incremental impacts that are attributed to the policy or change under scrutiny. In the flycatcher analysis, the Service defined baseline conditions to include all effects associated with the listing of the flycatcher, even those that might be co-extensive with effects of critical habitat designation.
1. In the court's mind, "(b)ecause (the) economic analysis done using the FWS's baseline model is rendered essentially without meaning by 50 CFR 402.02, we conclude Congress intended that the FWS conduct a full analysis of all of the economic impacts of a critical habitat designation, regardless of whether those impacts are attributable co-extensively to other causes."³
1. This analysis attempts to comply with the court's instructions by revising the approach to defining baseline conditions within the areas of proposed critical habitat. Specifically, this analysis presents a detailed discussion of existing Federal, State, and local requirements and both current and planned activities within proposed critical habitat that are reasonably expected to occur regardless of whether the area is designated as critical habitat. The analysis looks at the effects of future consultations on these activities,

¹ New Mexico Cattle Growers Association, et.al. v. U.S. Fish and Wildlife Service, No. 00-2050, U.S. Court of Appeals, Tenth Circuit, May 11, 2001.

² In a previous case, Middle Rio Grande Conservancy District v. Bruce Babbitt, No. CIV 99-870, 99-872, and 99-1445M/RLP (consolidated), U.S. District Court for the District of New Mexico, the court similarly questioned the approach used by the Service to identify the economic effects of designating critical habitat for the Rio Grande silvery minnow. Although the court openly questioned the definition used by the Service to establish the baseline of the economic analysis, the court did not expressly rule on this approach as it set aside the rule for other reasons.

³ 50 CFR 402.02 defines the terms used by the Service in implementing sections 7(a)-(d) [16 U.S.C. 1536(a)-(d)] of the Endangered Species Act of 1973, as amended. The regulatory definitions for the terms "jeopardy" and "adverse modification" can be found in this section.

whether those effects are thought to be the result of listing or critical habitat.

1. The approach to baseline definition employed in this analysis is similar to that employed in previous approaches, in that the goal is to understand the *incremental* effects of a designation. However, it does provide more extensive discussion of pre-existing baseline conditions than previous critical habitat economic analyses. Typical economic analyses concentrate mostly on identifying and measuring, to the extent feasible, economic effects most likely to occur because of the action being considered. Baseline conditions, while identified and discussed, are rarely characterized or measured in any detailed manner because by definition, these conditions remain unaffected by the outcome of the decision being contemplated. While the goal of this analysis remains the same as previous critical habitat economic analyses, that is to identify and measure the estimated incremental effects of the proposed rulemaking, the information provided in this analysis concerning baseline conditions is more detailed than that presented in previous studies.

1. This report represents characterization of possible economic impacts associated with the designation of critical habitat for wintering piping plovers. To understand the concerns of stakeholders, IEc solicited opinions from the Service and other Federal and state agencies regarding current and potential uses of land within the proposed critical habitat, potential Federal nexuses, historical consultations regarding the wintering piping plover, the potential for future consultations, and the potential costs associated with possible future consultations. Using this information, this report characterizes the impacts likely to be associated with the designation of critical habitat for wintering piping plovers.

EXECUTIVE SUMMARY

1. The purpose of this report is to identify and analyze the economic impacts that would result from the proposed critical habitat designation for wintering piping plovers (*Charadrius melodus*). This report was prepared by Industrial Economics, Incorporated (IEc), under contract to the U.S. Fish and Wildlife Service's (the Service) Division of Economics.⁴
1. Section 4(b)(2) of the Endangered Species Act (the Act) requires the Service to designate critical habitat on the basis of the best scientific and commercial data available, after taking into consideration the economic impact, and any other relevant impact, of specifying any particular area as critical habitat. The Service may exclude areas from critical habitat designation when the benefits of exclusion outweigh the benefits of including the areas within critical habitat, provided the exclusion will not result in extinction of the species.

Proposed Critical Habitat

1. The Service has proposed 146 units of critical habitat for the piping plover along the Southeastern and Gulf coasts. Eighteen of these units are in North Carolina, 15 in South Carolina, 16 in Georgia, 36 in Florida, 15 in Mississippi, three in Alabama, 7 in Louisiana, and 37 in Texas. The areal extent of the proposed units is 2,104,877 acres. The wintering population of the species was listed as threatened in 1985. Any existing structures within the critical habitat area, such as roads and buildings, which do not contain the constituent elements necessary to support this species, are not considered critical habitat. Exhibit ES-1 displays how the 2,104,877 acres of critical habitat for the piping plover are distributed across Federal, state, and private landholders. As shown, state land represents the greatest share, about two-thirds of all the habitat proposed. Note that open waters (ocean, rivers, bays) within the proposed units were considered state ownership. As discussed in Section 2, Federal and private land account for the majority of critical habitat when measured as linear shoreline. The Service considers all of the proposed units to be occupied by piping plovers.

Economic Impacts Considered

1. This analysis defines an impact of critical habitat designation to include any effect critical habitat designation has above and beyond the impacts associated with the listing of the piping plover. Section 9 of the Act makes it illegal for any person to "take" a listed species, which is defined by the

⁴ The critical habitat units analyzed in this report and described in Appendix A refer to the designation as contained in the proposed rule. It is our understanding that the final designation may differ from that of the proposed rule.

Act to mean harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or the attempt to engage in any such conduct.⁵ To evaluate the *increment* of economic impacts attributable to the critical habitat designation for the piping plover, above and beyond the ESA listing, the analysis assumes a “without critical habitat” baseline and compares it to a “with critical habitat” scenario. The difference between the two is a measurement of the net change in economic activity that may result from the designation of critical habitat for the piping plover.

Exhibit ES-1				
SUMMARY OF LOCATION AND OWNERSHIP PROPOSED CRITICAL HABITAT UNITS FOR WINTERING PIPING PLOVERS				
Total Area of Units Expressed in Acres				
	Federal	State	Private	TOTAL
North Carolina	16,504	39,331	6,511	62,346
South Carolina	3,917	17,660	3,427	25,004
Georgia	6,081	25,592	5,819	37,492
Florida	44,058	140,520	4,191	188,769
Alabama	415	2,565	3,857	6,837
Mississippi	70,083	45,756	6,299	122,138
Louisiana	127,207	955,660	201,268	1,284,135
Texas	145,192	171,529	61,435	378,156
Total	413,457	1,398,613	292,807	2,104,877

1. The "without critical habitat" baseline represents current and expected economic activity under all existing modifications prior to critical habitat designation. These include the take restrictions that resulted from the listing of the piping plover as well as other Federal, state, and local requirements that may limit economic activities in the regions containing the proposed critical habitat units. For example, the U.S. Army Corp of Engineers (the Corps) would still need to consult with the Service on wetland development projects that may affect a listed species to ensure the

⁵ 15 U.S.C. 1531 et seq.

proposed activities do not jeopardize the continued existence of the species, regardless of the critical habitat status of the parcel. While there may be both current and future impacts attributable to the listing of the piping plover, such impacts are not the subject of this analysis.

1. This analysis recognizes that, even in cases where consultations would be expected in the absence of critical habitat, there are scenarios that could involve additional consultation costs. For example, (1) some consultations that have already been “completed” may need to be reinitiated to address critical habitat if the project is not completed; and (2) consultations taking place after critical habitat designation may take longer because critical habitat issues will need to be addressed. In addition, the economic impact of critical habitat designation can go beyond the direct costs of consultations and project modifications. For example, even in units for which critical habitat designation is not expected to impose further project modifications beyond those required by the listing of the piping plover, government and private landowners may nonetheless incur costs resulting from critical habitat designation above and beyond those attributable to the listing of the piping plover as a threatened species. These costs might include the value of time spent in conducting section 7 consultations beyond those associated with the listing of the piping plover, and/or delays in implementing public and private development activities with a Federal nexus, which may result in losses to individuals and society, among other costs.

1. To estimate the effect that critical habitat designation would have on existing and planned activities, the preparers of this report:
 - ℄ Collected information on current and planned land uses in proposed critical habitat areas for the piping plover;
 - ℄ Reviewed comments received from various stakeholders after the draft economic analysis was made public;
 - ℄ Identified whether a Federal nexus to expected economic activities in these units exists;
 - ℄ Requested stakeholders' opinions on: (1) whether each identified land use might be subject to modifications related to the listing of piping plovers; and (2) whether additional modifications might be imposed under the critical habitat designation.
1. The designation of critical habitat may also result in economic benefits. Resource preservation or enhancement, which is aided by designation of critical habitat, may constitute an increase in non-recreational values provided directly by the species and

indirectly by its habitat. Categories of potential benefits associated with the designation include enhancement of wildlife viewing, increased biodiversity and ecosystem health, and intrinsic (passive use) values.⁶

Findings

1. The initial scoping analysis revealed six activities that may be affected by the designation of wintering critical habitat for the piping plover. These activities are: i) residential and commercial shoreline development; ii) dredging and disposal of dredged materials; iii) beach nourishment; iv) oil and gas drilling exploration; v) recreational visitation of shoreline; and vi) waterway operations. Additionally, highway construction and disaster relief were also identified as activities that could merit consultations in a few units.

1. Based on a review of data on past consultations from respective field offices of the Service, as well as information from various stakeholders, this analysis estimates the number of formal consultations associated with these activities that might occur over the next 10 years within the critical habitat designation. Administrative costs for conducting these formal consultations were calculated for the entire listing area, using a cost model that has been applied to a number of critical habitat economic analyses.

⁶ Intrinsic values, also referred to as passive use values, include categories of economic benefits such as existence value, i.e., knowledge of continued existence of a resource or species; and bequest value, i.e., preserving the resource or species for future generations.

As shown on Exhibit ES-2, this analysis estimates that 165 formal consultations could occur over the next ten years, at a total cost of approximately \$1.4 million. While the Service believes, for all proposed units, that these consultations would have occurred regardless of critical habitat designation (i.e., they are most likely attributable to the listing of the species), various Federal action agencies may view the designation of critical habitat as providing new information and requirements. The estimated range presented in Exhibit ES-2 (i.e., one-half to twice the above value) is based on varying expectations of stakeholders regarding (1) whether specific consultations would have been required in the baseline (i.e., in the absence of critical habitat), (2) the number of expected consultations (including economic activity levels in the proposed units); and (3) whether these consultations would reach the "formal" stage.

1. Interviews with stakeholders and further research revealed that dredging and associated disposal of dredged material, beach nourishment and housing / commercial development are the only activities likely to result in project modification costs following section 7 consultations. The Service believes, for all proposed units, that these costs are most likely attributable to the listing of the species, due to the fact that they consider all of the proposed units to be occupied. However, as noted above, various Federal action agencies may view the designation of critical habitat as providing new information and requirements. Thus, this analysis presents upper-bound cost estimates, reflecting the assumption that some additional impacts may be experienced as a result of critical

habitat designation.

1. Instead of attempting to cost-out each potential project modification, this analysis follows a case-study approach intended to provide reasonable upper-bound cost estimates for potential activities. We used a sampling of case studies provided by commenters and interviews with stakeholders with projects that had the requisite Federal nexus for our analysis. These case studies are intended for use by the Service in understanding the potential economic impact of critical habitat designation in a given unit, recognizing that (1) these costs may be attributable to the listing or other baseline requirement, (2) the described modifications may not be required.
1. Exhibit ES-2 summarizes the case study cost estimates for various categories of activities, based on this approach. This exhibit also provides an index of the units that might experience these categories of impacts. It is important to note that the Service and various stakeholders provided alternative points of view on the frequency of consultations, the attribution of any expected consultations and modifications to the listing versus designation of critical habitat, and the extent of any project modifications that might occur following a consultation. This analysis assumes that some additional consultations and modifications may ultimately be attributable to critical habitat designation, and that substantive requirements may be imposed on projects as a result of the designation, as reflected in the upper-bound estimates provided in Exhibit ES-2.

Exhibit ES-2 RESULTS OF ECONOMIC IMPACT ANALYSIS FOR CRITICAL HABITAT FOR WINTERING PIPING PLOVERS		
Activity	Cost scenarios* (to the nearest \$10,000)	Projected Impact in Critical Habitat*
Formal consultations (likely range of cost: one-half to twice the given values)	Cost over ten years to: Fish and Wildlife Service: \$500,000 Federal Agencies: \$680,000 Private Entities: \$230,000 Total: \$1,420,000	Total number of Formal Consultations by State: AL: 4, FL: 32, GA: 5, LA: 1, MS: 31, NC: 80, SC: 8, TX: 4 Total: 165
Housing and commercial development	Case study of Southern Texas: Upper-bound estimate of lost profits to developers over ten years: C 500 condominiums on South Padre Island: \$190,000 C 3000+ units on North Padre Island: \$1,190,000 C 5,000+ units on Pointe San Luis: \$3,210,000	Units potentially impacted: MS: 2 - 8 GA: 1,2,14 TX: 3, 5, 6, 34
Dredging and Disposal	Case studies with additional cost scenarios over next five years: <i>St. Lucie Inlet, FL</i> C Upper-bound: \$760,000 in costs for pumping dredge to new location. C The Service believes that it is highly improbable that this type of project would require a modification associated with the plover, since sand is usually reworked by wave action and unlikely to affect critical habitat. <i>Murrels Inlet, SC</i> C Upper-bound: \$640,000 in cost for pumping dredge to new location. C The Service believes that it is highly improbable that this type of project would require a modification associated with the plover, since dredged sand may in fact provide valuable habitat for related species such as terns, Wilsons plovers and the threatened seabeach amaranth.	Units potentially impacted: AL: 2 FL: 25, 33 MS: 5,9-11,14,15 NC: 1,4-6,8-13, 14, 16-18 SC: 3, 9 TX: 3

Exhibit ES-2

**RESULTS OF ECONOMIC IMPACT ANALYSIS FOR
CRITICAL HABITAT FOR WINTERING PIPING PLOVERS**

Activity	Cost scenarios* (to the nearest \$10,000)	Projected Impact in Critical Habitat*
Beach nourishment and restoration	Case study of <i>Tybee Island Restoration Project</i> , GA: C Upper-bound cost: \$1,050,000 annually C The Service believes that any modification is unlikely, since the berms are underwater and would not impact critical habitat.	Units likely to be impacted: FL: 6,7, 8, 10, 11 GA: 1, 2, 14 LA: 4, 5, 7 MS: 3-8, 11 NC: 4,6,10,12,16-18 SC: 5,6,13,15
Oil and gas drilling and exploration	No project modifications expected. Only consultation costs are expected.	Units potentially affected: FL: 2,3,5-9 MS: 4,6,7,9,13,14 NC: 1,9,10 TX: 3
Tourism and recreation	No project modifications expected. Only consultation costs are expected.	Units potentially affected: FL: 2, 7 NC: 1-15 SC: 9
Waterway operation	No project modifications expected. Only consultation costs are expected.	Units potentially affected: LA: 4, 5, 7 SC: 3 TX: 3 (concerns largely addressed through dredging consultations)
* The Service does not believe that the projected impacts and associated costs are attributable to Critical Habitat and maintains that such impacts are attributable to the listing (as indicated in the Final Rule for the designation).		